

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 45

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex Parte* YUTAKA NAITO, FUMIHARU TAKAHASHI  
MITSUHIRO MORI and YOZO KONDO

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Appeal No. 1997-4099  
Application 08/345,343

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HEARD: February 15, 2001

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Before, OWENS, JEFFREY T. SMITH and PAWLIKOWSKI, *Administrative Patent Judges*.

JEFFREY T. SMITH, *Administrative Patent Judge*.

*Decision on appeal under 35 U.S.C. § 134*

Applicants appeal the decision of the Primary Examiner finally rejecting claims 12 and 14-21. We have jurisdiction under 35 U.S.C. § 134.

### ***BACKGROUND***

The invention is directed to a method for producing a polyolefin in the presence of a catalyst comprising an organometallic compound and a transition metal compound. The catalyst is formed by the reaction product of (i) at least one member selected from the group consisting of metal magnesium and a hydroxylated organic compound, and oxygen-containing organic compounds of magnesium; (ii) at least one oxygen-containing organic compound of titanium; (iii) at least one silicon compound; components (i)-(iii) are first reacted with (iv) at least one organoaluminum halide compound of the formula  $\text{AlR}_z^5\text{X}_{3-z}$ ; and then with (iv') at least one organoaluminum halide compound different from (iv); adding thereto (v) at least one organometallic compounds of metals of Groups Ia, IIa, IIb, IIIb, and IVb of the Periodic Table; and (vi) absorbing at least one  $\alpha$ -olefin in the reaction product of (i)-(v) in an amount of 0.001 to 20 parts by weight per part by weight of said reaction product of (i)-(v). The polyolefins produced by the claimed method are said to provide polymers with excellent powder properties. (Brief, page 6, last paragraph). Claim 12 which is representative of the claimed subject matter is attached as an appendix to this decision.

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As evidence of unpatentability of the claimed subject matter, the Examiner relies on the following references:

Hoff et al. (Hoff)	4,105,846	Aug. 8, 1978
Morita et al. (Morita)	4,298,713	Nov. 3, 1981
Welch et al. (Welch)	4,410,671	Oct. 18, 1983
Arzoumanidis et al. (Arzoumanidis)	4,579,836	Apr. 1, 1986
Matsuura et al. (Matsuura)	4,985,515	Jan. 15, 1991
Kondo et al. (Kondo)	5,118,769	Jun. 2, 1992
Mitsubishi (Printed Japanese Patent Application)	JP-62-115004	May 26, 1987

### ***THE REJECTION***

The Examiner entered the following ground of rejection:

Claims 12 and 14-21 are rejected as unpatentable under 35 U.S.C. § 103 over Kondo in view of Mitsubishi, Morita, Welch, Arzoumanidis, Matsuura and Hoff. (Examiner's Answer, page 2).

### ***OPINION***

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellant in support of their respective positions. This review leads us to conclude that the rejection is not well founded. Accordingly, we will reverse § 103 rejection. We need to address only claim 12, which is the sole independent claim.

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It is well established that the examiner has the initial burden under § 103 to establish a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). To that end, the examiner must show that some objective teaching or suggestion in the applied prior art, or knowledge generally available in the art would have led one of ordinary skill in the art to arrive at the claimed invention. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996).

Kondo discloses a process for producing a polyolefin in the presence of a catalyst comprising a transition metal compound and an organometallic compound. (Column 3, lines 20-25). The catalyst is composed of (A) the reaction product of (i) at least one member selected from the group consisting of metal magnesium and a hydroxylated organic compound, and oxygen-containing organic compounds of magnesium; (ii) at least one oxygen-containing organic compound of titanium; (iii) at least one silicon compound; and (iv) at least one halogenated aluminum compound; (B) at least one organometallic compounds of metals of Groups Ia, IIa, IIb, IIIb, and IVb of the Periodic Table; and (C) at least one kind of halogen-containing compound. (Column 3, lines 27-50). Kondo discloses the halogenated aluminum compound can

be used independently or as mixtures of more than two. (Column 7, lines 8-10). Kondo does not disclose the halogenated aluminum compound can be added in multiple stages.

Hoff discloses a process for increasing the particle size of polyethylene polymers wherein the polymer is produced in the presence of a catalyst comprising an organometallic compound and a transition metal compound. (Column 1, lines 7-24). The catalyst component is formed from three components (i) magnesium dialkoxide, (ii) a lower alkyl titanium (IV) alkoxide and (iii) a lower alkyl alkylaluminum dichloride. (Column 2, lines 7-22). Hoff discloses the alkylaluminum compound is added in at least two stages in equal portions. (Column 3, lines 6-11). Hoff does not disclose different alkylaluminum compounds can be added in multiple stages in equal portions.

The Examiner asserts it would have been obvious to use two different organoaluminum halides each added in different stages. The Examiner's position is reproduced below:

It would be [sic, have been] obvious to use two different organoaluminum halides coming within the scope of the claims because (1) Kondo teaches that two or more different organoaluminum halide compounds may be used and (2) Hoff teaches that adding the alkyl aluminum halide precipitant to the homogenous solution of the magnesium alkoxide and titanium alkoxide in two stages increases the particle size of the catalyst and of the polymer produced therewith... Thus, from these two teachings it would be [sic, have been] obvious to use two different organoaluminum halides using the sequential contact procedure of Hoff.

(Examiner's Answer, page 3, second paragraph)

The Examiner appears to argue that it would have been “obvious to try” two different organoaluminum halides using the sequential contact procedure of Hoff in the process of Kondo. “Obvious to try” is the proper standard for obviousness where the prior art relied upon contains a detailed enabling methodology, a suggestion to modify the prior art to produce the claimed invention, and evidence suggesting the modification would be successful. *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). The prior art cited on this record does not detail an enabling methodology or a suggestion to modify the prior art. The Examiner has not established that one of ordinary skill in the art would have considered Hoff's advantages, achieved by equal portion addition of the same alkyl aluminum halide precipitant in multiple stages, would apply to the addition of one type of alkyl aluminum halide in one stage and a different type of alkyl aluminum halide in a separate stage. The combined teachings of the references does not provide enough information that would give the hypothetical person of ordinary skill in the art a reasonable expectation of success that the addition of one type of alkyl aluminum halide in one stage and a different type of alkyl aluminum halide in a separate stage would provide the benefit asserted by the Examiner which was increased particle size of the catalyst and increased particle size of the produced polymer. Accordingly, we find that the initial burden of establishing the *prima facie* obviousness of the claimed subject matter has not been met.

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The statement of rejection includes the Mitsubishi, Morita, Welch, Arzoumanidis, and Matsuura references. These references were included in the rejection for the proposition that the prepolymerization of a catalyst is well known to those skilled in the art. (Examiner's Answer, paragraph bridging pages 3 to 4). The prepolymerization of a catalyst would not have led to the claimed invention because the prepolymerization of a catalyst does not address the deficiencies of Kondo and Hoff stated above. The rejection of claims 12 and 14-21 as unpatentable under 35 U.S.C. § 103 is reversed.

Since we reverse for the lack of the presentation of a *prima facie* case of obviousness by the examiner, we need not reach the issue of the sufficiency of the evidence as allegedly demonstrating unexpected results. *See In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

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***CONCLUSION***

The rejection of claims 12 and 14-21 as unpatentable under 35 U.S.C. § 103 over Kondo in view of Mitsubishi, Morita, Welch, Arzoumanidis, Matsuura and Hoff is reversed.

***REVERSED***

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TERRY J. OWENS	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
JEFFREY T. SMITH	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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BEVERLY A. PAWLIKOWSKI	)	
Administrative Patent Judge	)	

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## APPENDIX

12. A method for producing a polyolefin in the presence of a catalyst comprising a transition metal compound and an organometallic compound, which comprises polymerizing at least one  $\alpha$ -olefin in the presence of a catalyst system comprising:
- (A) a solid catalyst component prepared by reacting a homogenous solution consisting of
- (i) at least one member selected from the group consisting of metal magnesium and a hydroxylated organic compound, and oxygen-containing organic compounds of magnesium,
  - (ii) at least one oxygen-containing organic compound of titanium and
  - (iii) at least one silicon compound, first with
  - (iv) at least one first organoaluminum halide compound of the formula:  

$$AR^5_zX_{3-z}$$
 wherein  $R^5$  is a hydrocarbon group having from 1 to 20 carbon atoms, X is a halogen atom, and  $1 \leq z \leq 2$ , and wherein the atomic ratio of gram atoms of AR in the component (iv) to gram atoms of Mg in the component (i) (AR/Mg) is from 0.1 to 2.5 to precipitate crystalline nuclei, and then with
  - (iv') at least one second organoaluminum halide compound different from (iv) of the formula:  

$$AR^5_zX_{3-z}$$
 wherein  $R^5$  and X are the same as defined above, and  $0 < z < 2$ , and wherein the atomic ratio of gram atoms of AR in the component (iv') to gram atoms of Mg in the component (i) is from 0.5 to 20 to effect growth of the crystalline nuclei precipitated in (iv), adding thereto
  - (v) at least one member selected from the group consisting of organometallic compounds of metals of Groups Ia, IIa, IIb, IIIb, and IVb of the Periodic Table, and
  - (vi) absorbing at least one  $\alpha$ -olefin in the reaction product of (i)-(v) in an amount of 0.001 to 20 parts by weight per part by weight of said reaction product of (i)-(v), and
- (B) an additional amount of at least one member selected from the group consisting of organometallic compounds of metals of Groups Ia, IIa, IIb, IIIb and IVb of the Periodic Table.